

REMARKS

These remarks are responsive to the Office Action dated October 23, 2002.

Claims 1-20 were pending in the present application. Claims 1-20 have been rejected.

Claims 1, 6, 9, 10, 14, 16, and 19 have been amended for clarification. New claim 21-23 has been added. Claims 5 and 13 have been canceled. Accordingly, claims 1-4, 6-12, and 14-23 are pending.

Amendments to the Specification

The Examiner has stated:

The abstract of the disclosure is objected to because of the following informalities. Lines 8-9 read: In addition, the connectors and mounting flange are such that they permit[s] the tray to be inserted in a plurality of directions. Examiner notes that the included term "they" would properly convey the intended meaning. Additionally, examiner contends that lines 9-10 are contrary to the function of the device. In particular lines 9-10 read: Finally a coding system is provided that prevents radiation from being delivered if the tray is oriented [correctly]. It is assumed that the intended function of the coding system is to be able to prevent the delivery of radiation to an object if the tray is incorrectly oriented within the medical linear accelerator (see also Fig. 4; disclosure p. 5, lines 14-15). ...

... As noted above, the disclosure recites a coding system inconsistency (p.3, lines 7-8). Based on Fig. 4 of the supplied drawings, and disclosure p. 5, lines 14-15, it can be concluded that the function of the coding scheme is to prevent radiation delivery in the instance of improper tray orientation.

In response, the abstract of the disclosure has been amended, per the Examiner's suggestions, to address the above-referenced objection.

Amendments to the Claims

Claims 1, 6, 9, and 16 have been amended to further define the scope and novelty of the present invention, as well as to correct typographical and grammatical errors. Specifically, claims 1, 6, 9, and 16 have been amended to clarify that the coded

connectors "allow the tray to identify its orientation to a user." Support for these amendments is found in the specification on page 4, lines 15-16, and applicants respectfully submit that no new matter is presented thereby.

Dependent claim 10 has been amended to depend from claim 9.

Dependent claims 14 and 19 have been amended to further define the scope and novelty of the present invention. Specifically, the feature of "uniquely associating the tray with a particular patient" as been added. Support for these amendments is found in the specification on page 4, lines 20-21, and applicants respectfully submit that no new matter is presented thereby.

For the reasons set forth more fully below, Applicants respectfully submit that the remaining claims are allowable. Consequently, reconsideration, allowance and passage to issue are respectfully requested.

New Claims

New claims 21-23 have been added to further define the scope and novelty of the present invention. Support for these amendments is found in the specification at page 4, lines 20-21, and Applicants respectfully submit that no new matter has been presented thereby.

Amendments to the Figures

The Examiner has stated:

The drawings are objected to because the direction arrows indicating the either of two insertion directions as recited in p4, line 12 of the present application is not shown. ...

The resistor pair must be shown or the feature(s) canceled from the claim(s). ...

In response, Figure 3 has been amended to address the above-referenced informality. Specifically, the direction arrows in Figure 3 have been made more visible. Regarding the resistor pair, claims 5 and 13 have been canceled.

Present Invention

The present invention as recited in varying scope in all of the independent claims is directed toward a method and system for a beamblock tray for use with multiple defining heads within a medical linear accelerator is disclosed. The beamblock tray comprises a tray portion, and a plurality of coded connectors coupled to the tray portion. The tray portion can be inserted into a defining head in a plurality of directions based upon the plurality of coded connectors. A system and method in accordance with the present invention utilizes a plurality of coded connectors that can be used to identify a patient. In addition, the connectors and mounting flange are such that they permit the tray to be inserted a plurality of directions. Finally, a coding system is provided that prevents radiation from being delivered if the tray is oriented incorrectly. A dual axis beamblock tray in accordance with the present invention circumvents this problem by a counting for the two possible orientations of beamblock tray holders, thereby permitting the radiation therapist to use a single tray with a variety of linear accelerators.

Objections

The Examiner has stated:

Claims 5, 10, 13 is objected to because of the following informalities:

Claims 5 and 13 recite: ... a plurality of coded connectors comprising resister pair ...the correct spelling for "resister" is resistor.

Claim 10 (preamble: medical linear accelerator) depends on claim 8 (preamble: a tray). This dependency renders claim 10 ambiguous, as it is unclear what applicants consider being their invention. Examiner contends that the intended dependency of claim 10 is claim 9. ...

As previously mentioned, claims 5 and 13 have been canceled. Claim 10 has been amended to properly depend from claim 9.

Independent Claims 1, 6, 9, and 16

Amended claims 1, 6, 9, and 16 are provided below for ease of review.

1. (Amended) A beamblock tray for use with multiple defining heads in a medical linear accelerator, the beamblock tray comprising:
a tray portion; and
a plurality of coded connectors coupled to the tray portion, wherein the tray portion can be inserted into a defining head in a plurality of directions based upon the plurality of coded connectors, and wherein each of the plurality of coded connectors allow the tray to identify its orientation to a user.

6. (Amended) A beamblock tray for use with multiple defining heads in a medical linear accelerator, the beamblock tray comprising:
a tray portion ; and
first and second coded connectors coupled to the tray portion, wherein the tray portion can be inserted into a defining head in a plurality of directions based upon the first and second coded connectors, and a flange which surrounds the tray portion is coupled between the first and second coded connectors and the tray portion, and wherein each of the first and second coded connectors allow the tray to identify its orientation to a user.

9. (Amended) A medical linear accelerator comprising
a support gantry coupled to the control console in the medical linear accelerator;
a defining head coupled to the support gantry; and
a beamblock tray for use with the defining head, the beam block tray comprising a tray portion and a plurality of coded connectors coupled to the tray portion, wherein the tray portion can be inserted into the defining head in a plurality of directions based upon the plurality of coded connectors, and wherein each of the plurality of coded connectors allow the tray to identify its orientation to a user.

16. (Amended) A medical linear accelerator comprising
a support gantry coupled to the control console in a medical linear accelerator;
a defining head coupled to the support gantry; and
a beam block tray for use with the defining head, the beamblock tray comprising a tray portion and first and second coded connectors coupled to the tray portion, wherein the tray portion can be inserted into a defining head in a plurality of directions based upon the first and second coded connectors, and a flange

which surrounds the tray portion is coupled between the first and second coded connectors and the tray portion, and wherein the coded connectors allow the tray to identify its orientation to a user.

35 USC §103 Rejections

The Examiner has stated:

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants admitted prior art in view of Maas (U.S. Patent 5,365,566).

As per claim 1, Applicants admitted prior art (hereinafter referred to as AAPA) discloses an apparatus comprising a tray portion and a coded connector coupled to the tray portion (Fig. 2; p. 2 lines 1-6). AAPA does not explicitly disclose an apparatus comprising a plurality of coded connectors coupled to the tray portion.

AAPA teaches an apparatus configured with a coded connector, enabling it to have a predetermined configuration within a receiving slot (p. 2, lines 1-3).

Maas discloses an apparatus comprising means arranged on a diaphragm for orientation and beam shaping of radiation (Fig. 7, above, column 1, lines 61-68, column 2, lines 1-2).

It would have been obvious to modify the AAPA such that it incorporated a plurality of coded connectors. ... so that the device could be oriented in a plurality of positions, based on the arrangement of the coded connectors as taught by AAPA (Fig. 2; p. 2, lines 1-19) and further supported by the teachings of Maas (Fig. 7, above, column 1, lines 61-68, column 2, lines 1-2). Additionally, it would have been obvious ... to incorporate a plurality of coded connectors, since it has been held that mere duplication of essential working parts of a device involves only routine skill in the art.

Applicants respectfully traverse the Examiner's rejections. As described below, Applicants' admitted prior art (AAPA) in view of Maas fails to describe or suggest the present invention as recited in independent claims 1, 6, 9, 14, 16, and 19.

Mass is directed to a radiation diaphragm comprising a diaphragm lamella that includes adjustment elements shown in Figure 7. These adjustment elements engage the diaphragm lamella to match the shape of an examination subject.

The combination of AAPA and Maas fails to teach or suggest the cooperation of the elements recited in claims 1, 6, 9, and 16. Applicants agree with the Examiner that AAPA does not explicitly disclose an apparatus comprising a plurality of coded connectors coupled to the tray portion.

Moreover, Maas fails to teach or suggest any "coded connectors," as recited in claim 1. For this feature, the Examiner has referred to Figure 7 of Maas. In contrast, Figure 7 of Maas shows "adjustment elements" 19a and 20a. These adjustment elements merely adjust a "diaphragm lamella" 17 to match the shape of an examination subject. The adjustment elements are clearly different from the coded connectors, as recited in claim 1. Furthermore, the adjustment elements function of adjusting a diaphragm lamella to match the shape of an examination subject is clearly different from the function of identifying an orientation as recited in claim 1.

Moreover, the plurality of coded connectors, as recited in claims 1, 6, 9, and 16 are not merely duplications of the coded connector of AAPA. All of these independent claims recite "wherein the tray portion can be inserted into a defining head in a plurality of directions based upon the plurality of coded connectors." . . . and "wherein each of the plurality of coded connectors" allow the tray to identify its orientation to a user." AAPA neither teaches nor suggests this cooperation of the coded connectors with the other elements of the claims.

Therefore, AAPA and Maas fail to describe or suggest the cooperation of the "plurality of coded connectors," as recited in claim 1. Accordingly, claim 1 is allowable over the cited references and is in condition for allowance.

Claims 6, 9, and 16 have similar limitations to claim 1. Accordingly, claims 6, 9, and 16 are also allowable over the cited references.

Dependent Claims 2-4, 7-8, 10-12, and 17-18

Claims 2-4, 7-8, 10-12, and 17-18 depend from claims 1, 6, 9, and 16, respectively, are thus allowable for at least the same reasons as claims 1, 6, 9, and 16.

Dependent Claims 2 and 10

Claim 2 and amended claim 10 are provided below for ease of review.

2. The tray of claim 1 which includes a flange which surrounds the tray portion and is coupled between the plurality of coded connectors and the tray portion.

10. (Amended) The medical linear accelerator of claim 9 which includes a flange which surrounds the tray portion and is coupled between the plurality of coded connectors and the tray portion.

The Examiner has stated:

As per claims 2 and 10, AAPA discloses an apparatus comprising a flange that surrounds the tray portion and is coupled between the plurality of coded connectors and the tray portion (Fig. 2).

Applicants respectfully traverse the Examiner's rejections.

The Examiner has referred to Figure 2 of the specification. However, Figure 2 clearly fails to describe or suggest the "flange" element as recited in claims 2 and 10.

Furthermore, the specification makes clear that conventional beamblock trays do not have a "flange." Specifically, the specification on page 4, lines 9-13, states that there are "two primary features that distinguish the tray from conventional beamblock trays. First, a flange is extended around the entire perimeter of the tray portion 208 so that the tray 200 can be inserted into slots within the head (not shown) in either of two directions as indicated by the arrows in Figure 3."

For the reasons identified above, AAPA does not describe or suggest the cooperation of elements as recited in independent claims 2 and 10, and claims 2 and 10 are thus allowable over the cited references. Furthermore, claims 2 and 10 depend from claims 1 and 9, respectively, are thus allowable for at least the same reasons as claims 1 and 9.

Independent Claims 14 and 19

Amended claims 14 and 19 are provided below for ease of review.

14. (Amended) A method for determining if a beamblock tray is oriented correctly in a defining head of a medical linear accelerator, the method comprising the steps of:

- (a) uniquely associating the tray with a particular patient;
- (b) determining if a coded connector of a plurality of coded connectors on the beamblock tray is recognized;
- (c) identifying a mismatch if the coded connector is not recognized; and
- (d) preventing radiation from being delivered by the medical linear accelerator.

19. (Amended) A computer readable medium containing program instructions for determining if a beamblock tray is oriented correctly in a defining head of a medical linear accelerator, the program instructions for:

- (a) uniquely associating the tray with a particular patient;
- (b) determining if a coded connector of a plurality of coded connectors on the beamblock tray is recognized; and
- (c) identifying a mismatch if the coded connector is not recognized; and
- (d) preventing radiation from being delivered by the medical linear accelerator.

The Examiner has stated:

As per claims 14 and 19, AAPA does not explicitly disclose a method comprising the steps of determining if a coded connector on the beam-block tray is recognized; identifying a mismatch and preventing the delivery of radiation.

It would have been obvious to modify the AAPA such that it comprised the steps of determining if the coded connector on the beam-block tray is recognized; identifying a mismatch and preventing the delivery of radiation. One would have been motivated to make such a modification so that radiation is not delivered to healthy tissues of a patient but only to predetermined zones for treatment as taught by AAPA.

Applicants respectfully traverse the Examiner's rejections.

Applicants agree with the Examiner that AAPA does not explicitly disclose a method comprising the steps of determining if a coded connector on the beam-block tray is recognized; and identifying a mismatch and preventing the delivery of radiation.

AAPA also fails to disclose or suggest the step of "uniquely associating the tray with a particular patient based upon a code," as recited in claims 14 and 19. AAPA

merely allows the tray to be inserted in a particular slot of a defining head. This is clearly different from “uniquely associating the tray with a particular patient based upon a code,” as recited in claims 14 and 19. Accordingly, independent claims 14 and 19 are allowable over the cited reference.

Dependent Claims 15 and 20

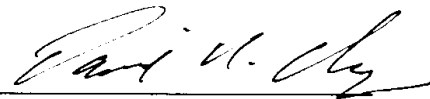
Claims 15 and 20 depend from claims 14 and 19, respectively, are thus allowable for at least the same reasons as claims 14 and 19.

Accordingly, for the above-identified reasons, claims 1-4, 6-12 and 14-23 are allowable over the cited reference. Applicants respectfully request reconsideration and allowance of the claims as now presented.

Attached hereto and captioned “Marked Version to Show Changes Made” is a marked-up version of the changes made to the specification, figures, abstract, and claims by the current amendment.

Should any unresolved issue remain, the Examiner is invited to call Applicants' attorney at the telephone number indicated below.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "David D. Chung".

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ON BEHALF OF
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MARKED VERSION TO SHOW CHANGES MADE**IN THE SPECIFICATION**

Paragraph beginning on page 3, line 8

A system and method in accordance with the present invention utilizes a plurality of coded connectors that can be used to identify a patient. In addition, the connectors and mounting flange are such that permits the tray to be inserted a plurality of directions. Finally, a coding system is provided that prevents radiation from being delivered if the tray is oriented [correctly] incorrectly. A dual axis beamblock tray in accordance with the present invention circumvents this problem by a counting for the two possible orientations of beamblock tray holders, thereby permitting the radiation therapist to use a single tray with a variety of linear accelerators.

IN THE FIGURES

An amended Figure 3 is attached.

IN THE ABSTRACT

A beamblock tray for use with multiple defining heads within a medical linear accelerator is disclosed. The beamblock tray comprises a tray portion, and a plurality of coded connectors coupled to the tray portion that make the tray "intelligent" enough to identify its orientation to a user. The tray portion can be inserted into the defining head in a plurality of directions based upon the plurality of coded connectors. A system and method in accordance with the present invention utilizes a plurality of coded connectors that can be used to identify a patient. In addition, the connectors and a mounting flange are such that [permits] they permit the tray to be inserted in a plurality of directions. Finally, a coding system is provided that prevents radiation from being delivered if the

tray is oriented [correctly] incorrectly. A dual axis beamblock tray in accordance with the present invention circumvents this problem by a counting for the two possible orientations of beamblock tray holders, thereby permitting the radiation therapist to use a single tray with a variety of linear accelerators.

IN THE CLAIMS

1. (Amended) A beamblock tray for use with multiple defining heads in a medical linear accelerator, the beamblock tray comprising:

- a tray portion; and
- a plurality of coded connectors coupled to the tray portion, wherein the tray portion [(208)] can be inserted into a defining head in a plurality of directions based upon the plurality of coded connectors, and wherein each of the plurality of coded connectors allow the tray to identify its orientation to a user.

Claim 5 has been cancelled.

6. (Amended) A beamblock tray for use with multiple defining heads in a medical linear accelerator, the beamblock tray comprising:

- a tray portion ; and
- first and second coded connectors coupled to the tray portion, wherein the tray portion can be inserted into a defining head in a plurality of directions based upon the first and second coded connectors, and a flange which surrounds the tray portion is coupled between the first and second coded connectors and the tray portion, and wherein

each of the first and second coded connectors allow the tray to identify its orientation to a user.

9. (Amended) A medical linear accelerator comprising:
a support gantry coupled to the control console in the medical linear accelerator;
a defining head coupled to the support gantry; and
a beamblock tray for use with the defining head, the beam block tray comprising a tray portion and a plurality of coded connectors coupled to the tray portion, wherein the tray portion can be inserted into the defining head in a plurality of directions based upon the plurality of coded connectors, and wherein each of the plurality of coded connectors allows the tray to identify its orientation to a user.

10. (Amended) The medical linear accelerator of claim [8] 9 which includes a flange which surrounds the tray portion and is coupled between the plurality of coded connectors and the tray portion.

Claim 13 has been cancelled.

14. (Amended) A method for determining if a beamblock tray is oriented correctly in a defining head of a medical linear accelerator, the method comprising the steps of:

(a) uniquely associating the tray with a particular patient based on a code;

[(a)] (b) determining if a coded connector of a plurality of coded connectors on the beamblock tray is recognized as having the code;

[(b)] (c) identifying a mismatch if the coded connector is not recognized;
and

[(c)] (d) preventing radiation from being delivered by the medical linear accelerator [(10)].

16. (Amended) A medical linear accelerator comprising:
a support gantry coupled to the control console in a medical linear accelerator [(10)];
a defining head coupled to the support gantry; and
a beam block tray for use with the defining head, the beamblock tray comprising a tray portion and first and second coded connectors coupled to the tray portion, wherein the tray portion can be inserted into a defining head in a plurality of directions based upon the first and second coded connectors, and a flange which surrounds the tray portion is coupled between the first and second coded connectors and the tray portion, and wherein the coded connectors allow the tray to identify its orientation to a user.

19. (Amended) A computer readable medium containing program instructions for determining if a beamblock tray is oriented correctly in a defining head of a medical linear accelerator, the program instructions for:

(a) uniquely associating the tray with a particular patient based on a code;

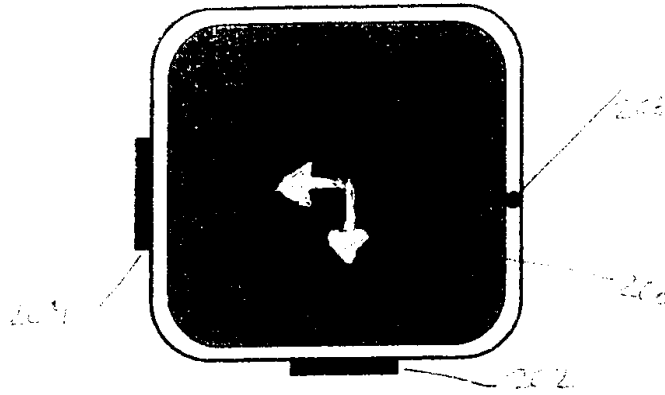


Fig. 3